

**Some interesting beetle mites from Pacific islands collected by Antonius van Harten (Acari: Oribatida). (*Acarologica Genavensia* CVIII)**

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**Some interesting beetle mites from Pacific islands collected by Antonius van Harten (Acari: Oribatida). (*Acarologica Genavensia* CVIII).** - Ten oribatid species are recorded: nine from Fiji (Viti Levu) and one from the Solomon Islands (Nendo). Among the species from Fiji, two are reported for the first time from this island and three species and one subspecies are new to science; for one of them a new genus (*Monstroripoda* gen. n.) is established in the family Oripodidae. The species found on the Solomon Islands is also new to science and a new genus (*Lignobates* gen. n.) is established for it in the family Haplozetidae.

**Keywords:** Acari - Oribatida - taxonomy - new genera - new species - Fiji - Solomon Islands.

## INTRODUCTION

The well-known entomologist Dr A. van Harten worked as a specialist in biological pest control and taxonomy of aphids and spiders in Africa (mainly Angola and Cape Verde), in the Middle East (mainly Yemen) and in the South Pacific.

Additionally, Antonius van Harten has done a great deal of work on the global inventory of the terrestrial arthropods of these countries, especially of Cape Verde and Yemen, collaborating with taxonomists from all over the world and particularly with the Geneva Natural History Museum. I already had the opportunity to study the Oribatida collected by him on the Cape Verde Islands (Mahunka, 1987, 1991) and in Yemen (Mahunka, 2000), and also his collection of Prostigmata and Astigmata from Cape Verde (Mahunka & Mahunka-Papp, 1991). Currently he has begun an inventory of the insects and arachnids of the United Arab Emirates.

An important part of our knowledge of the oribatid fauna of the South Pacific islands derives from Hammer's publications (e.g., 1971, 1972, 1973). In spite of the limited number of specimens added by van Harten's new samples I was able to find several new and interesting species.

For the "List of species" I follow the system of Marshall *et al.* (1987).

## LIST OF LOCALITIES

- 21 – FIJI: **Viti Levu**: Suva, in garden; VIII.1994; leg. A. van Harten.  
 192 – SOLOMON ISLANDS: Santa Cruz Islands: **Nendo**: Leaf litter in a coconut plantation; 28.-31.I.1995; leg. A. van Harten.  
 233 – FIJI: **Viti Levu**: Suva, yellow water trap in garden; IV.-V.1995; leg. A. van Harten.  
 297 – FIJI: **Viti Levu**: Tholo-i-Suva, 5km N of Suva, leaf litter in rainforest; 23.-27.VIII.1995; leg. A. van Harten.

## LIST OF IDENTIFIED SPECIES

**Liodidae** Grandjean, 1954*Liodes ramosus* Hammer, 1971

Locality: 297 – Fiji: 2 specimens.

Distribution: Fiji (hitherto only known from the type locality Viti Levu); second record for Fiji (Viti Levu).

**Trhypochthoniidae** Willmann, 1931*Allonothrus russeolus* Wallwork, 1960

Locality: 233 – Fiji: 2 specimens.

Distribution: Circumtropical (?); second record for Fiji (Viti Levu).

**Oppiidae** Grandjean, 1951*Arcoppia corniculifera fijiensis* ssp.n.

Locality: 21 – Fiji.

**Mochlozetidae** Grandjean, 1960*Uracrobates pygiseta* (Hammer, 1973)

Locality: 297 – Fiji: 2 specimens.

Distribution: Tonga (hitherto only known from the type locality Tongatapu); **first record for Fiji**.

**Oripodidae** Jacot, 1925*Monstroripoda tubulifera* gen. n., sp. n.

Locality: 297 – Fiji.

**Scheloribatidae** Grandjean, 1953*Brassiella penicillifer* Hammer, 1973

Locality: 297 – Fiji: 1 specimen.

Distribution: Tonga (hitherto only known from the type locality Tongatapu); **first record for Fiji**.

*Nasozetes lienhardi* sp. n.

Locality: 192 – Solomon Islands.

*Scheloribates praeincisus* (Berlese, 1910)

Locality: 21 – Fiji: 4 specimens.

Distribution: Oriental and Pacific Region.

*Tuberemaeus vanharteni* sp. n.

Locality: 192 – Fiji.

**Haplozetidae** Grandjean, 1936*Lignobates berndhauseri* gen. n., sp. n.

Locality: 233 – Fiji.

## DESCRIPTIONS AND REMARKS

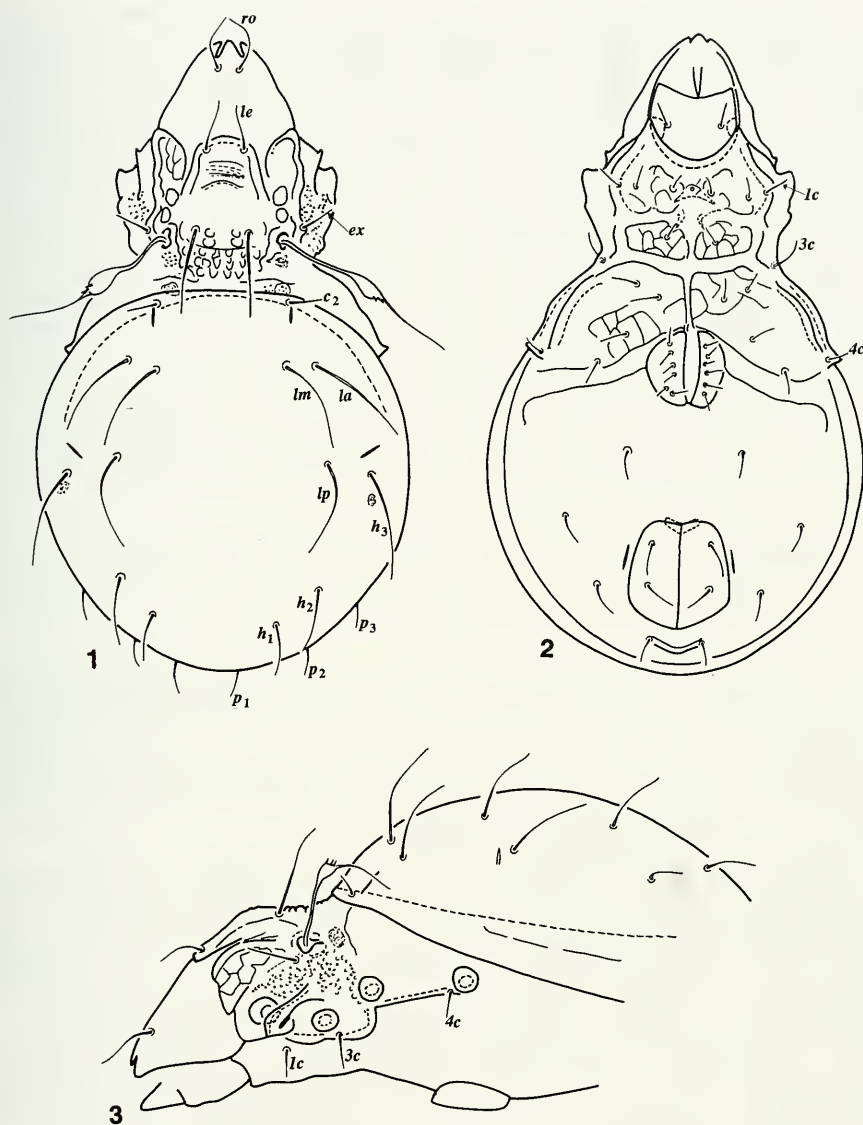
*Arcoppia corniculifera fijiensis* ssp. n.

Figs 1-6

MATERIAL EXAMINED: 21 – FIJI (**Viti Levu**): Holotype, 4 paratypes: From the same sample. Holotype and 2 paratypes: MHNG<sup>1</sup>, 2 paratypes: (1675-PO-03): HNHM<sup>2</sup>.

<sup>1</sup> MHNG = deposited in the Muséum d'histoire naturelle, Geneva.

<sup>2</sup> HNHM = deposited in the Hungarian Natural History Museum, Budapest, with identification number of the specimens in the Collection of Arachnida.



FIGS 1-3

*Arcoppia corniculifera fijiensis* ssp. n. – 1, body in dorsal view; 2, body in ventral view; 3, body in lateral view.

**DIAGNOSIS:** Rostrum tripartite, with larger median apex. Typical prodorsal structure with three weak, transversal ridges in the interlamellar region. Sensillus with one long branch and 2 very small spines. Two pairs of sigilla and 18-20 tubercles in the interbothridial region. Notogastral heterotrichy. Six pairs of genital setae arranged nearly in one row.

MEASUREMENTS: Length of body: 463-518  $\mu\text{m}$ , width of body: 264-319  $\mu\text{m}$ .

*Prodorsum*: Rostrum tripartite, median apex clearly wider than the lateral ones (Fig. 1). All three apices obtuse, equal in length. Shape of costulae typical, the median one horseshoe-shaped and broadened basally, its transversal band arched, longitudinal parts well-developed, but not reaching to the bothridia. Three weak, nearly transversal ridges present in the interlamellar region. Its S-shaped lateral costulae strong, well-developed, their basal part thick, bearing the exobothridial setae. Interlamellar region with 2 pairs of sigilla and some large, mostly quadrangular or triangular, irregular "tubercles" (Fig. 4). Exobothridial region distinctly granulate, sclerotised ridges not discernible. One pair of indistinct porose areas present in the sejugal region, behind the bothridia. All prodorsal setae simple, only with some fine cilia. Ratio between them:  $ex < le < ro < in$ . Sensillus (Fig. 6) with well-separated head bearing one very long and 2 (exceptionally 3) minute spines.

*Lateral part of body* (Fig. 3): S-shaped lateral costulae framing a field with a polygonal pattern. Exobothridial region and an area near acetabula 3 distinctly granulate. Pedotecta I small, discidium very long, with sharply pointed posterolateral margin.

*Notogaster*: Median part of dorsosejugal suture narrowed, nearly straight (Fig. 1). Notogastral heterotrichy present, setae *ta* very short, *te*, *ti*, *ms* and  $r_3$  equal in length, but  $r_1$  and  $r_2$  much shorter than these, like setae *p*. All setae simple, narrow, nearly smooth.

*Ventral parts of body* (Fig. 2): Mentum (Fig. 5) and epimeral region well-sclerotised, especially the lateral border bearing setae *1c*. Surface with conspicuous polygonal pattern. Epimeral setae of normal size, no essential differences between them. The longitudinal ridge, along the discidium, arched, strong. Genital setae arranged nearly in one longitudinal row. Position of aggenital, anal, adanal setae and lyrifissures normal. These setae also nearly equal in length.

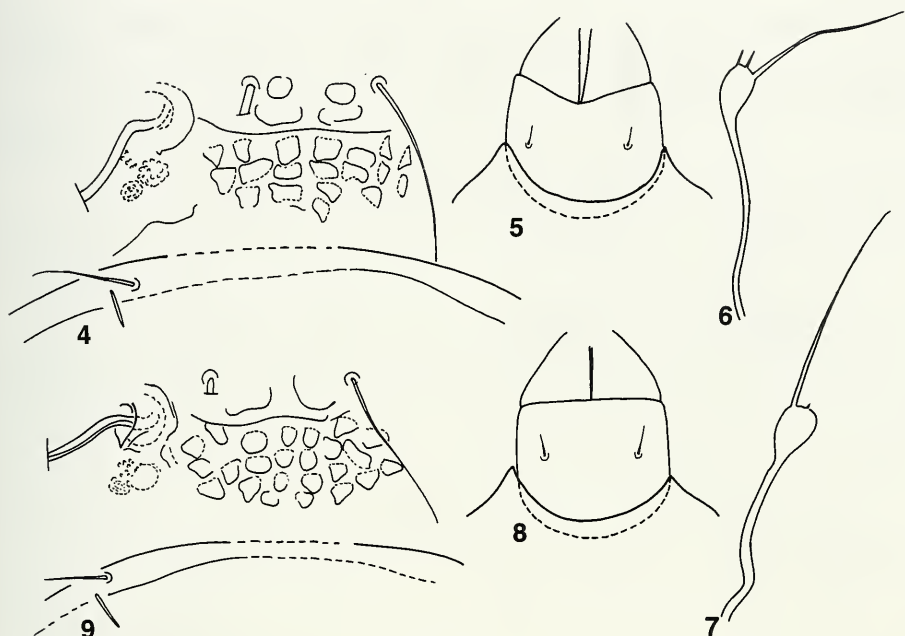
REMARKS: The nominate species *A. corniculifera* (Mahunka, 1978) described from Mauritius is well characterised by its tuberculate interbothridial field and the form of its sensillus. The new subspecies stands very near to the nominate subspecies, however in its interlamellar region it has 3 transversal ridges (absent in the nominate form) and in its interbothridial region it has fewer (18-20) but larger tubercles than the nominate form (24-26) (Fig. 9). Notogastral setae are longer in the new subspecies, setae *te* is reaching near to the insertion of setae *ms* and the form of the mentum also shows differences (see Figs 5 and 8). Some of the ventral setae (e.g., anal and adanal) are also longer in the new subspecies than in the nominate form.

DERIVATIO NOMINIS: Named after its origin.

### *Monstroripoda* gen. n.

TYPE SPECIES: *Monstroripoda tubulifera* sp. n.

DIAGNOSIS: Family Oripodidae Jacot, 1925. Dorsal and ventral surface of body well-sculptured. Rostrum distinctively modified, with a hammer-like apex and one pair of tubuliform appendages bearing rostral setae. Lamellae long, prelamellae and strong sublamellae present. Bothridia covered by the pteromorphae, sensilli uncovered. Ten



FIGS 4-9

*Arcoppia corniculifera fijiensis* ssp. n. – 4, basal part of prodorsum; 5, mentum; 6, sensillus. *Arcoppia corniculifera corniculifera* (Mahunka, 1978) – 7, sensillus; 8, mentum; 9, basal part of prodorsum.

pairs of notogastral setae, four pairs of sacculi present. Epimeral setal formula: 3 – 1 – 3 – 1. Genitoanal setal formula: 4 – 1 – 2 – 3. All legs tridactylous.

REMARKS: The system of the family Oripodidae is based on the genitoanal setal formula (Balogh & Balogh, 1999). On this basis the new taxon may be related to the genus *Protoripoda* Balogh, 1970. However, the form of the rostrum is distinctive and so far unknown in the whole family. Therefore it seems justified to establish a new genus.

DERIVATIO NOMINIS: A combination of the words “monstrum” and “Oripoda”, referring to the distinctive (monstruose) form of the rostrum.

***Monstroripoda tubulifera* sp. n.**

Figs 10-13

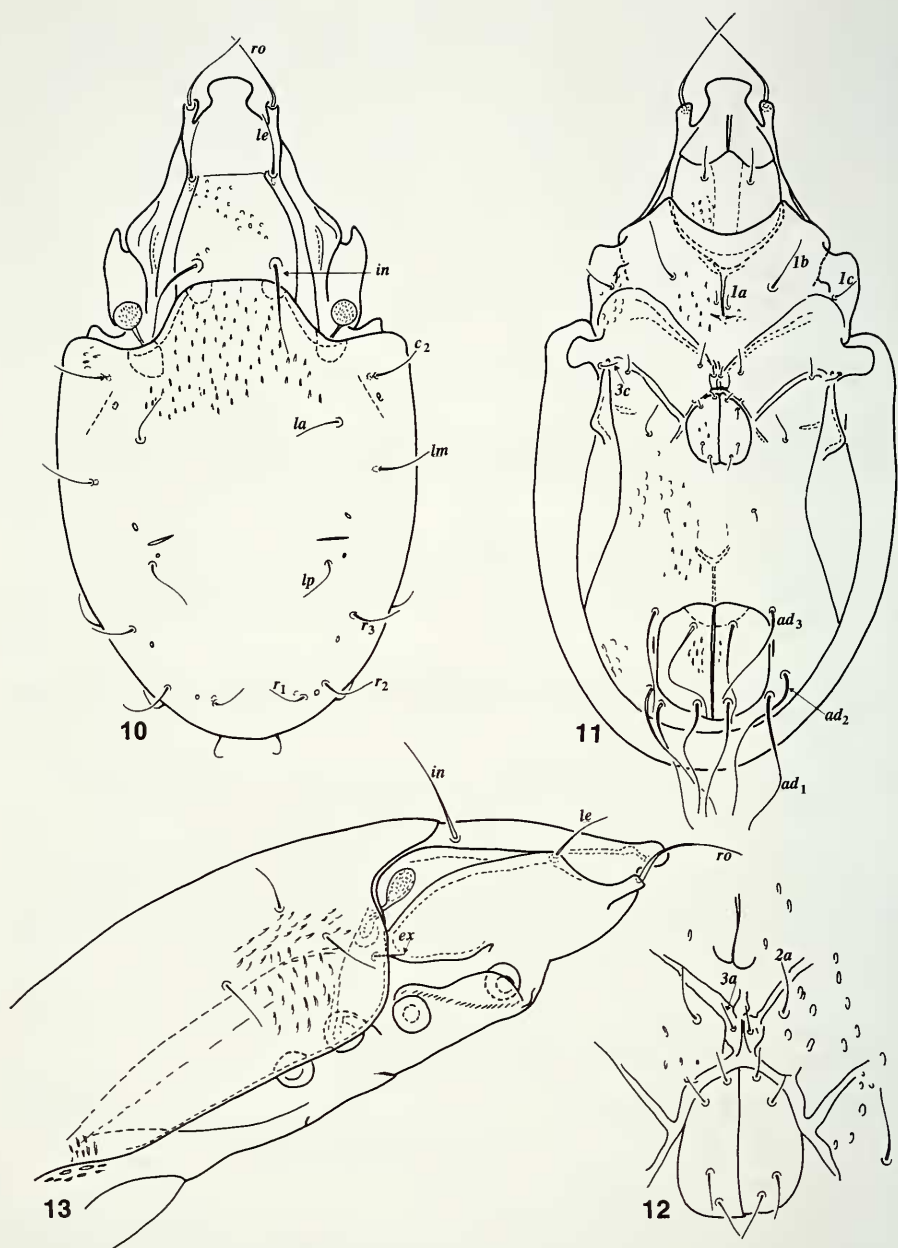
MATERIAL EXAMINED: Holotype: 297 – FIJI (Viti Levu); MHNG.

DIAGNOSIS: See diagnosis of the genus.

MEASUREMENTS: Length of body: 348  $\mu$ m, width of body: 184  $\mu$ m.

*Prodorsum*: Anterior part of rostrum elongated, nasiform, at the beginning neck-like, then widened, rostral apex rounded (Fig. 10). One pair of long, tubuliform appendages laterally, bearing the rostral setae. Lamellae long, without true apices, these parts connected by a fine line. Prelamellae long, reaching to the appendages. Sublamellae also well-sclerotised, not narrower than the lamellae. Ratio of the prodorsal setae:  $ex < le < in < ro$ . Rostral setae slightly dilated basally, otherwise all setae





FIGS 10-13

*Monstroripoda tubulifera* gen. n., sp. n. — 10, body in dorsal view; 11, body in ventral view; 12, genital region; 13, podosoma in lateral view.

simple, setiform. Bothridium covered by the pteromorphae, sensilli completely projecting, uncovered. Their heads clavate, nearly round, surfaces spiculate.

*Lateral part of podosoma*: Sublamella long and strong (Fig. 13), composing a ring-shaped formation. Pedotecta I low, without projecting part anteriorly. Pedotectae II-III small, discidium comparatively large, rounded laterally.

*Notogaster*: Anteromedian part of notogaster protruding into the interbothridial region anteriorly (Fig. 10). The front of the bothridia excavate; the surface distinctly ornamented by slit-like foveolae. Ten pairs of sacculi and ten pairs of comparatively long setae present.

*Ventral region* (Fig. 11): Mentum triangular anteromedially, its surface also sculptured. Alveoli of the epimeral surface forming short, irregular slits. Apodemes 2 and apo. 3 running medially. Apo. 2 touching each other, forming a well-sclerotised knot. Apo. 3 fused with an apodeme partly framing the genital aperture (Fig. 12). Epimeral setal formula: 3 – 1 – 3 – 1. Among the setae, *1b* the longest, *3a* the shortest of all, the latter hardly discernible. Surface of genital plates scarcely sculptured, anal and ventral plates similar to the other parts of the body. Genitoanal setal formula: 4 – 1 – 2 – 3. All four pairs of genital setae conspicuously narrow. Aggenital setae minute. Anal and adanal setae extremely long, flagellate, reaching well over the posteromedian tectum.

*Legs*: All legs tridactylous, with equal claws. Solenidia on legs III-IV with roundish dilated head.

REMARKS: The form of the rostral part of this species is unique in this family.

DERIVATIO NOMINIS: Named after the peculiar appendages of the rostrum.

### *Brassiella penicillifer* Hammer, 1973

Figs 14-15

MATERIAL EXAMINED: 297 – FIJI (Viti Levu).

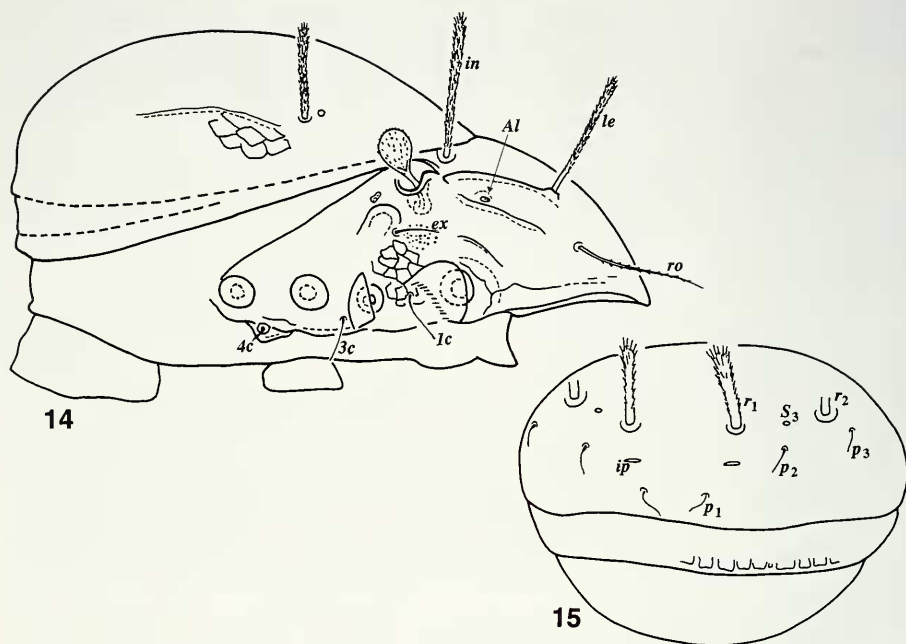
The species was described from Tonga (Tongatapu Island), on the basis of one male specimen, and placed in the genus *Brassiella*. This genus was established by Balogh (1970a) for the species *Carabodes reticulatus* Oudemans, 1915, from Ceylon, described (Oudemans, 1915) and redescribed (Oudemans, 1917) from a single specimen too. Therefore I give some complementary notes on the morphology of the species.

MEASUREMENTS: Length of body: 269 µm, width of body: 174 µm.

*Dorsal side*: The fine striation of the prodorsum consisting of very small granules. Notogastral surface ornamented with rather large alveoli, but the dark spot in their middle not visible to me. Seven pairs of long and 3 pairs (setae *p*) of very short and narrow notogastral setae present (Figs 14-15), setae *h*<sub>1</sub> longest of all, otherwise – excepted setae *p* – no essential differences.

*Lateral part of body*: Sublamella absent. Tutorium long but indistinct, without apex (Fig. 14). Lateral surfaces granulate and reticulated. Sublamellar and humeral areae porosae small but distinctly framed.

*Ventral side*: Mentum with transversal striation. Epimeral surface irregularly granulate. Aggenital setae absent, but 3 pairs of minute adanal setae present, *ad*<sub>1</sub> in



Figs 14-15

*Brassiella penicillifer* Hammer, 1973 – 14, body in lateral view; 15, notogaster in posterior view.

postanal,  $ad_2$  in para-anal (Hammer, 1973 described this) and  $ad_3$  also in para-anal position, far from the anal aperture and not near to lyrifissure *iad*.

*Nasozetes lienhardi* sp. n.

Figs 16-18

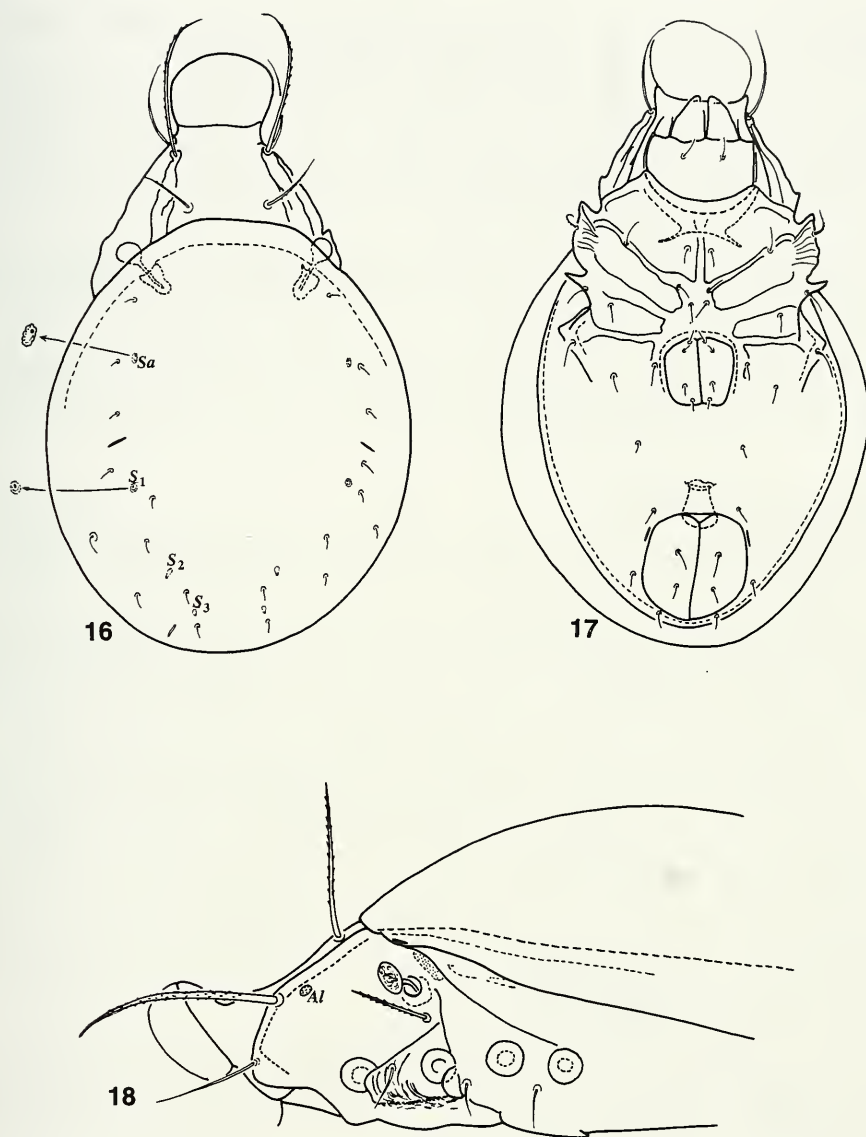
MATERIAL EXAMINED: Holotype: 297 – FIJI (Viti Levu); MHNG.

DIAGNOSIS: Rostral apex wide, its form typical for the genus. Lamellae and prelamellae well-developed. Form and length of the lamellar setae different from the other prodorsal setae. Four pairs of sacculi and 10 pairs of short notogastral setae present. Epimeral setal formula: 3 – 1 – 3 – 3. Genitoanal setal formula: 4 – 1 – 2 – 3. All legs tridactylous.

MEASUREMENTS: Length of body: 368  $\mu$ m, width of body: 224  $\mu$ m.

*Prodorsum*: Rostral apex of the single male specimen similar to that of the other species of the genus, but its protruding part extremely wide and its “neck-part” only hardly narrower than the anterior part (Fig. 16). This latter is separated from the anterior one by a transversal line, anterior part is much lighter than the other parts. Lamellae and prelamellae thick, well-developed, lamellar apices absent. Rostral setae very thin, simple, lamellar setae much longer and thicker than the other prodorsal setae, bent, sword-shaped. Interlamellar and exobothridial setae also long, slightly blunt at tip. Bothridium and the posterior part of the sensillus covered by anterior tectum of the notogaster. Sensillus round.





FIGS 16-18

*Nasozetes lienhardi* sp. n. – 16, body in dorsal view; 17, body in ventral view; 18, podosoma in lateral view.

*Notogaster*: Dorsosejugal suture nearly straight. Ten pairs of minute notogastral setae, all curved, simple. Four pairs of distinct typical sacculi.

*Lateral part of podosoma* (Fig. 18): Lamellar and humeral porose areas distinct, lamellar ones also discernible in dorsal view. Pedotecta 1 large, its surface ornamented

by curved rims, some short ribs visible along the pedotecta on the epimeral surface. Pedotecta 2-3 small. Setae *Ic* arising on the surface of the pedotecta 1.

*Ventral parts* (Fig. 17): Epimeral region well-divided into epimeral surface, epimeral borders composing a closed network framing also the genital aperture anteriorly and laterally. Epimeral setae – excepted setae *Ic* – short and simple, but all distinct, no essential differences between them. Genital, aggenital, anal and adanal setae also simple, little shorter than the epimeral setae.

REMARKS: The new species belongs without doubt to the genus *Nasozetes* Sellnick, 1930. It differs from the heretofore known 3 species (see Sengbusch, 1957) by the shape of its rostral apex (much wider than in the other species) and mainly by the ratio and form of the prodorsal setae.

DERIVATIO NOMINIS: I dedicate the new species to Dr C. Lienhard (Geneva Museum), who continuously helps Dr Van Harten in his work, and also helped us in our work during our stay in the Geneva Museum.

***Tuberemaeus vanharteni* sp. n.**

Figs 19-22

MATERIAL EXAMINED: 192 – SOLOMON ISLANDS (**Nendo**): Holotype, 2 paratypes from the same sample. Holotype and 1 paratype: MHNG, 1 paratype (1676-PO-03): HNHM.

DIAGNOSIS: Family Scheloribatidae. Body surface with different ornamentation, prodorsum round, notogaster with diverse split-like formations. Interlamellar setae simple. Sensillus asymmetrically fusiform, sharply pointed anteriorly, weakly spiculate. Genitoanal setal formula: 3 – 1 – 2 – 3. All legs tridactylous.

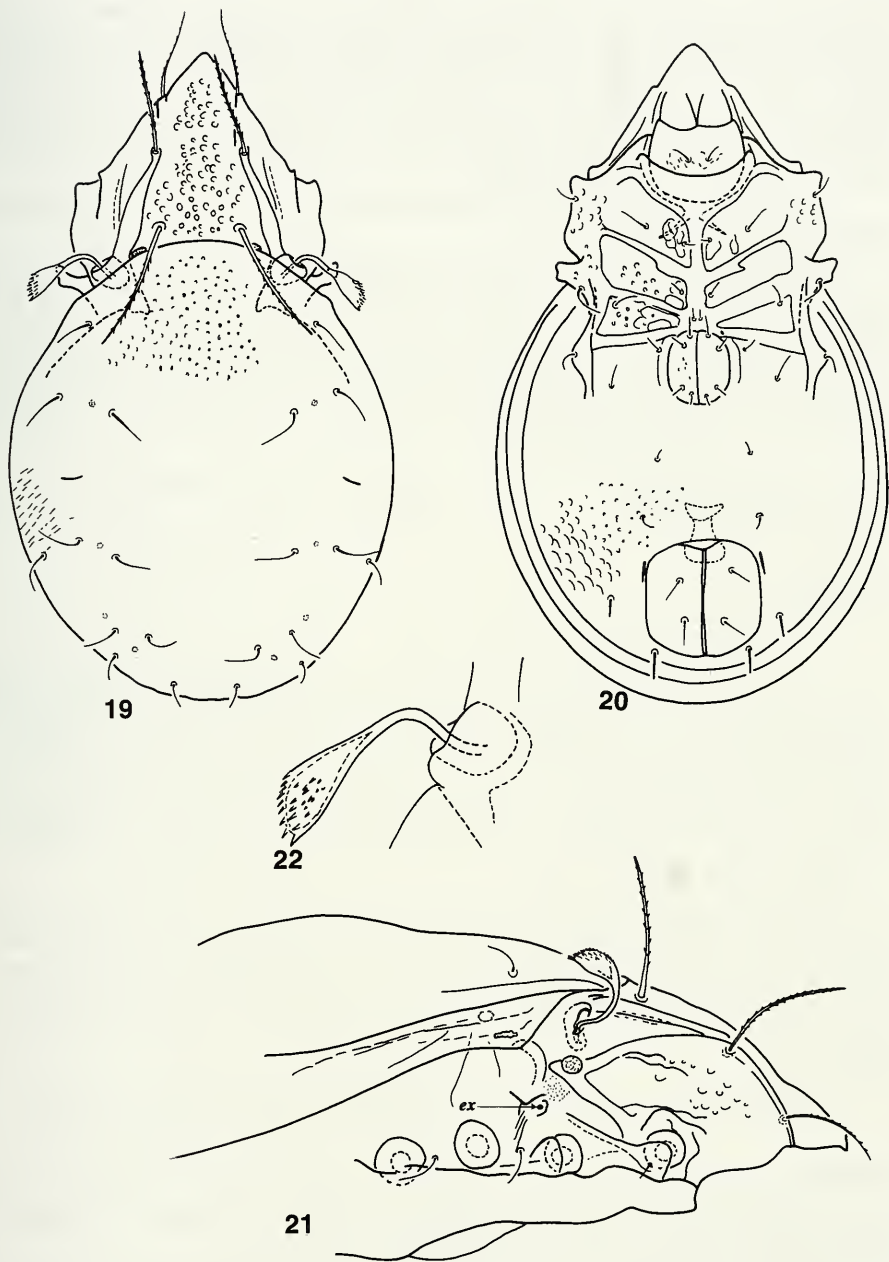
MEASUREMENTS: Length of body: 404-438  $\mu\text{m}$ , width of body: 224-254  $\mu\text{m}$ .

*Prodorsum*: Surface ornamented with round, irregularly arranged alveoli. Those in the middle part nearly equal in size, some smaller ones present in the basal part. Rostrum slightly elongated, triangular (Fig. 19). Lamellae long, S-shaped, without true apices, continuing into prelamellae. Rostral setae setiform, their tips very fine, lamellar and interlamellar setae with needle-shaped tips. Exobothridial setae represented only by their alveoli. Ratio of the prodorsal setae:  $ex < in < le < ro$ . Bothridium cup-shaped. Sensillus (Fig. 22) asymmetrically fusiform, truncate with pointed tip, its anterolateral surface covered by small spicules.

*Lateral part of podosoma*: Prelamella long, reaching over the insertion point of the rostral setae to the prodorsal margin. Sublamella also long (Fig. 21), not directed to the bothridium. A weak tutorium discernible. Sublamellar porose areas hardly visible, humeral porose areas absent (?). Pedotecta I low, with projected part anteriorly. Pedotecta 2-3 small, discidium comparatively large.

*Notogaster*: Surface ornamented with different types of alveoli, some roundish anteriorly, small, slit-like medially, very long and strong posterolaterally. Notogastral setae comparatively long, typical of the genus. 4 pairs of sacculi present.

*Ventral region* (Fig. 20): Mentum triangular anteromedially, its surface weakly sculptured. Alveoli of epimeral surface absent on the epimeron 1, but present on epimera 2 – 4. All roundish. Apodemes typical for the genus, all composing a close network. Epimeral setal formula: 3 – 1 – 3 – 3. Setae *Ic* arising laterally, *3c* on the lateral margin of the pedotecta 2-3 and setae *4c* on the discidium. Setae *Ib* the longest,



FIGS 19-22

*Tuberemaeus vanharteni* sp. n. — 19, body in dorsal view; 20, body in ventral view; 21, podosoma in lateral view; 22, sensillus.

3a the shortest of all, the latter indistinct. Surface of genital and anal plates scarcely sculptured. Ventral plate like the other parts of the body, medially with small and roundish sculptures, laterally with long and large slit-like formations. Genitoanal setal formula: 4 - 1 - 2 - 3. Anterior setae of genital plates longer than the others, all narrow. Aggenital setae minute. Anal and adanal setae also short. Setae  $ad_1$  and  $ad_2$  stick-shaped, blunt at tip,  $ad_3$  curved, setiform.

*Legs*: All legs tridactylous, with equal claws. Femora of legs II-IV sculptured with irregular slits or alveoli.

**REMARKS**: The new species is characterised by the form of its sensillus, the simple interlamellar setae, the long notogastral setae and last not least by the peculiar ornamentation of the notogaster. It stands nearest to *T. similis* Balogh, 1970. However, the notogastral setae of the new species are much longer, and in *T. similis* the long, slit-like alveoli are missing on the posterolateral part of the notogaster and on the ventral plate laterally (see Balogh, 1970b).

**DERIVATIO NOMINIS**: I dedicate the new species to Dr A. Van Harten, the collector of this interesting material.

### *Lignobates* gen. n.

**TYPE SPECIES**: *Lignobates berndhauseri* sp. n.

**DIAGNOSIS**: Family Haplozetidae. Rostrum rounded. Lamellae and sublamellae very weak, without lamellar cusps. Prelamellae absent. Lamellar setae located on the prodorsal surface in the interlamellar position, along the inner side of the lamellae. Prodorsal setae simple. Sensillus long, reclinate, with dilated head. Dorsosejugal suture distinct. Pteromorphae movable. Four pairs of large porose areas and ten pairs of minute notogastral setae present. Pedotecta small, discidium distinct, custodium not developed. Genitoanal setal formula: 4 - 1 - 2 - 3. All legs monodactylous.

**REMARKS**: The new taxon is distinguished by the form of the lamellae and the position of the interlamellar setae, the distinct dorsosejugal suture, the four pairs of porose areas on the notogaster and the genitoanal setal formula. A similar combination of characters, mainly regarding the position of the interlamellar setae, is known in the genus *Perxylobates* Hammer, 1972, but the dorsosejugal suture is absent in *Perxylobates*.

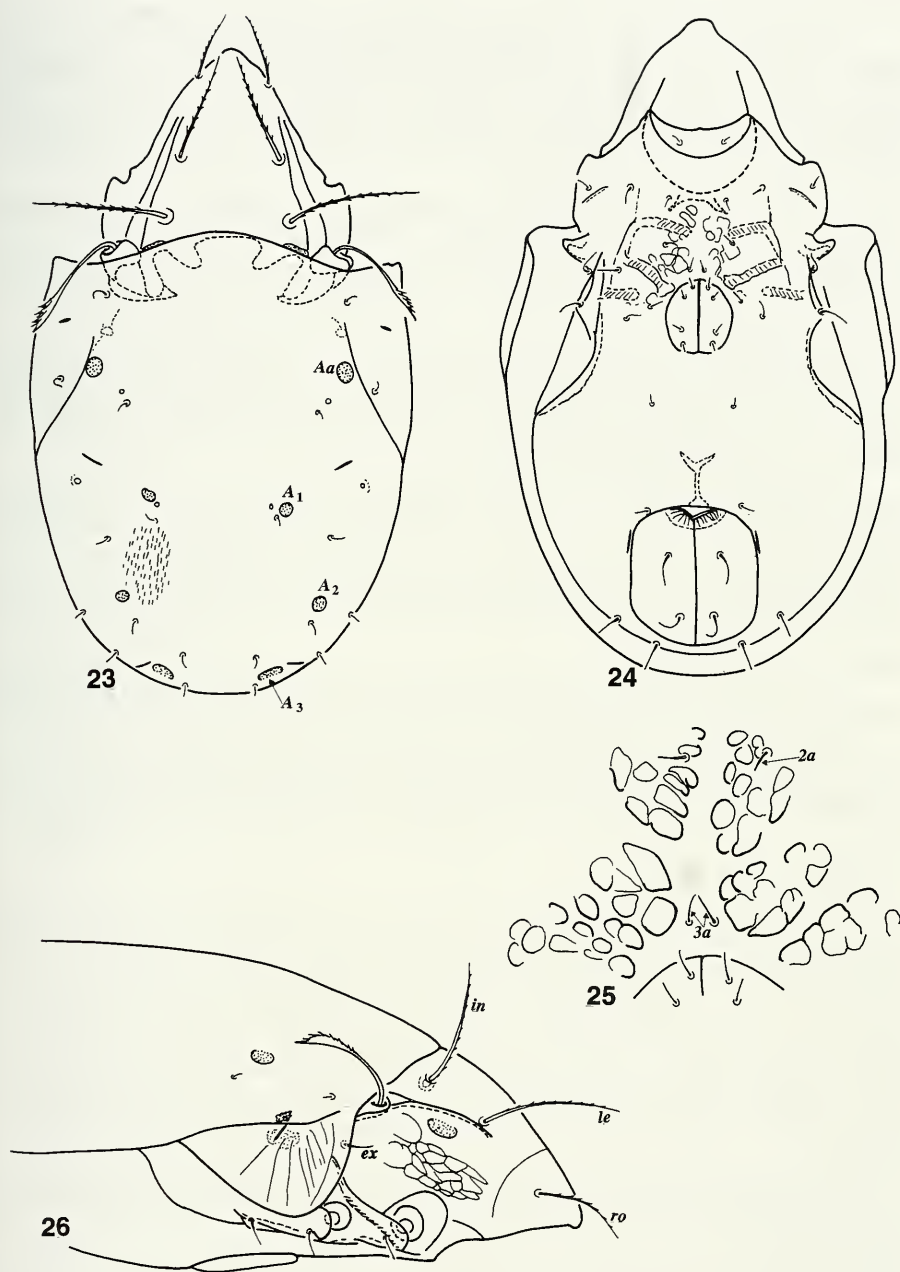
**DERIVATIO NOMINIS**: This is the latin version of the first syllable of *Xylobates*.

### *Lignobates berndhauseri* sp. n.

Figs 23-26

**MATERIAL EXAMINED**: 233 - FIJI (**Viti Levu**): Holotype, 1 paratype: same sample. Holotype: MHNG, paratype (1677-PO-03): HNHM.

**DIAGNOSIS**: Lamellae without cusps, interlamellar setae arising in the interlamellar position. Sensilli long, directed backwards, their heads asymmetrically pilose, with pointed tips. Notogastral surface ornamented with short, fine lines. Ten pairs of minute notogastral setae present. Epimeral setal formula 3 - 1 - 3 - 3. Genitoanal setal formula: 4 - 1 - 2 - 3. All legs monodactylous.



FIGS 23-26

*Lignobates berndhauseri* gen. n., sp. n. — 23, body in dorsal view; 24, body in ventral view; 25, characteristic pattern in the epimeral region; 26, podosoma in lateral view.



MEASUREMENTS: Length of body: 488-495  $\mu\text{m}$ , width of body: 293-300  $\mu\text{m}$ .

*Prodorsum*: Rostral apex short, slightly nasiform. Lamellae long, curved medially (Fig. 23). All prodorsal setae setiform, rostral ones densely, the others sparsely pilose. Ratio of the prodorsal setae:  $ex < ro < le < in$ . Sensilli long, directed backwards, their heads reaching over pteromorphae laterally, lanceolate, each with 7-8 short spicules arranged in two rows.

*Lateral part of podosoma* (Fig. 26): Sublamellae short, weak. Exobothridial field with polygonal pattern. Sublamellar and humeral porose areae large, oval. Pedotecta I very low, without higher anterior part. Discidium broad. Surface of pteromorphae with radial striae.

*Notogaster*: The whole surface covered with short lines, giving the impression of being scratched. Dorsosejugal suture a sharp, distinct line. Sejugal porose areas oval. Pteromorphae large, nearly triangular; their outer margin rounded. Four pairs of porose areas, sometimes one large and one minute instead of one ( $A_1$ ). Ten pairs of minute, fine, curved notogastral setae present.

*Ventral regions* (Fig. 24): Surface of the epimeral region with a characteristic, large pattern (Fig. 25) consisting of large alveoli (sigilla). All epimeral setae simple and short. Setae  $1c$  arising laterally, at the base of pedotecta 1. Discidium wide, setae  $4c$  arising on their outer margin. Genitoanal setae short. Only anterior genital setae longer than the others. Adanal setae shorter than the anal ones, setae  $ad_1$  stand in post-,  $ad_2$  in para-,  $ad_3$  in preanal position.

*Legs*: All legs with one large claw. Femur II with anteriorly extending, round ventral lamelliform expansion, the other femora bearing simple blade-like structures.

REMARKS: See the remarks after the description of the genus.

DERIVATIO NOMINIS: I dedicate the new species to my friend and adviser, Dr Bernd Hauser (Geneva), for his continuous help in my studies at the Geneva Museum.

## ACKNOWLEDGEMENTS

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